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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,796	02/23/2004	Satoshi Tatsuura	118798	5436

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

LEPISTO, RYAN A

ART UNIT PAPER NUMBER

2883

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/782,796

Applicant(s)

TATSUURA ET AL.

Examiner

Ryan Lepisto

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-7,17 and 19-23 is/are rejected.
- 7) ☒ Claim(s) 2-4,8-16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____ *Bu Italy*

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. **Claims 1, 6-7, 19 and 22-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Tian et al (US 2004/0001666)** (Tian) and **Fukuzawa et al (US 5,547,705)** (Fukuzawa).

Tian teaches an optical switching device (10, Figure 1) comprising a substrate (14) and an organic film (12) used as the control part (paragraph 0066) wherein the optical switching is performed by applying signal and control light to the organic film (12) with wavelengths of the light set in a region in the vicinity of resonance of the longer wavelength side (maximum absorption wavelength) in the absorption spectrum of the organic film (paragraphs 0066-0067). Tian also teaches using control and signal light with pulses having a time width of 100 fs, which is between 10^{-12} and 10^{-13} seconds, a light control part comprising the organic film (12) and a dielectric film (13) (paragraph 0065), the light control part being in independent plural sections (Figure 2, part of 15)

where light control is performed in parallel to the signal light (Figure 2, paragraphs 0074) with an optical input part (right of 15) and an optical output part (left of 15).

Tian does not teach expressly changing the phase difference of the signal light by changing the real (refractive index) and imaginary (coefficient of absorption) parts of the refractive of the light control part (organic film (12)) by using the control light. Tian teaches changing the real part of the refractive index, which is usually referred to as the refractive index. Tian does not teach changing the imaginary part, which is usually referred to as the coefficient of absorption.

Fukuzawa teaches a nonlinear organic thin film device that is controlled by a control light incident on an organic film that changes both the real and imaginary parts of the refractive index with a control light (column 1 lines 15-22), which inherently cause a phase difference.

Tian and Fukuzawa are analogous art because they are from the same field of endeavor, nonlinear organic thin film device that is controlled by a control light incident on an organic film.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the teachings of Tian to include the practice of changing the coefficient of absorption or imaginary part of the refractive index as taught by Fukuzawa.

The motivation for doing so would have been to be able to control the device by an optical signal to make it an all-optical device thereby involving less components and power consumption.

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2. **Claims 5, 13 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tian and Fukuzawa as applied to claims 1, 6-7, 19 and 22-23 above, and further in view of **Shay et al (US 6,314,215)** (Shay).

The combination of Tian and Fukuzawa teaches the limitations described above used to reject claims 1, 6-7, 19 and 22-23 including changing the refractive index of the light control part causing a phase difference in the signal light.

The combination of Tian and Fukuzawa does not teach expressly a pair of orthogonal polarizers on both sides of the organic film in the optical path of the signal light.

Shay teaches an all-optical switch two optical polarizers on either side of the control section (Figure 4) in the path of the signal to provide 90 degrees of polarization rotation to the optical signal (column 5 lines 13-18), which will inherently keep the signals condensed, and focus them to the control part.

The combination of Tian and Fukuzawa and Shay are analogous art because they are from the same field of endeavor, nonlinear organic thin film device that is controlled by a control light incident on an organic film.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Tian and Fukuzawa to include polarizers with condensing and focusing means as taught by Shay.

The motivation for doing so would have been be sure the signal and control light are incident on the control part of the device so the device works more efficiently.

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Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tian and Fukuzawa as applied to claims 1, 6-7, 19 and 22-23 above, and further in view of **Hanson et al (US 2003/0035972)** (Hanson).

The combination of Tian and Fukuzawa teaches the limitations described above used to reject claims 1, 6-7, 19 and 22-23 including the input and output parts coupled to the control part, which includes a substrate.

The combination of Tian and Fukuzawa does not teach expressly the substrate being flexible

Hanson teaches a thin film device that uses a control signals to change the refractive index of the film and uses orthogonal polarizes to change a viewing angle of light with the thin film device being mounted on a flexible substrate (paragraph 0041).

The combination of Tian and Fukuzawa and Hanson are analogous art because they are from the same field of endeavor, thin film devices that uses a control signals to change the refractive index of the film.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Tian and Fukuzawa to include a flexible substrate as taught by Hanson.

The motivation for doing so would have been to increase design flexibility and overall flexibility of the device by making it bendable.

Allowable Subject Matter

3. **Claims 2-4, 8-16 and 18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. These claims would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the latter, either alone or in combination, does not disclose nor render obvious a organic film comprising a compound with formula (I) from the applicant's disclosure or the making through spin coating, a refractive index between the dielectric and organic film in a range of 0 to 1.8, an inorganic dielectric film formed by vacuum deposition or spin coating, or a focal point in the light control part in a range of 3 to 10 μm , in combination with the rest of the claimed limitations.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following reference teach all optical switching and various methods and films to achieve all optical switching: **Pao (US 3,790,252)**, **Sotoyama et al (US 5,594,093)**, **Glenn (US 3,700,307)** and **Golding et al (US 5,477,377)**. **Tian et al (US 2003/0220511)** teaches the allowable organic compound used, which goes to US application 10/404,655 that states this compound is allowable over prior art.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RAL

Ryan Lepisto

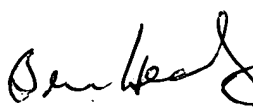
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Date: 10/19/04

Frank Font

Supervisory Patent Examiner

Technology Center 2800


Brian Healy
Primary Examiner